



1,2  
Est 1/1/2001

**THE CONFEDERATED TRIBES  
of  
THE COLVILLE RESERVATION**  
POST OFFICE BOX 150-NESPELEM WASHINGTON 99155      PHONE (509) 634-4711

## OVERVIEW: HISTORY OF LAKE ROOSEVELT/UPPER COLUMBIA RIVER BASIN CONTAMINATION AND ASSESSMENT ACTIVITIES

### **The Upper Columbia River Basin has been Contaminated by a Century of Releases of Hazardous Substances from Mining, Pulp Mill, Smelting, and Other Activities**

In the early 1980s, concerns about water quality in Lake Roosevelt and the upper Columbia River were first reported in a U.S. Fish and Wildlife study that reported elevated concentrations of arsenic, cadmium, lead, and zinc in fish. Follow up studies identified the primary source of the contamination to be a lead-zinc smelter on the Columbia River in British Columbia, 16 km upstream from the international boundary. Since the 1950s, the subject smelter had discharged several hundred tons of blast furnace slag and effluent per day into the Columbia River.

At the request of the U.S. Environmental Protection Agency (EPA) and Lake Roosevelt Water Quality Council (LRWQC), the U.S. Geological Survey (USGS) initiated a large-scale sediment quality study in 1992. The USGS reported that bed sediments were contaminated, as indicated by elevated concentrations of metals (arsenic, cadmium, copper, lead, mercury, and zinc), laboratory toxicity, and altered benthic invertebrate communities. In addition, a 1994 USGS study determined that mercury in sportfish was elevated to levels high enough to trigger a Washington Department of Health consumption advisory.

Due in part to the studies in Canada and Washington state, the subject lead/zinc smelter in Canada has apparently stopped discharging slag and has reduced its effluent discharge. While this is a significant improvement in the loadings of metals to the system, *large quantities of contaminated sediments remain in Lake Roosevelt*, and therefore studies are still in progress. For example, the Tribes are currently funding a USGS study to determine if the level of mercury found in the tissue of Walleye Pike has decreased since the 1994 study. In addition, the EPA is presently funding a USGS study in the Coeur d'Alene and Spokane River Basins as part of a Natural Resources Damage Assessment (NRDA) of the Coeur d'Alene system. The primary objective of that study is



to determine the relative contribution of metals to the Spokane River from the Lake Coeur d'Alene system.

While metals have received the most attention, organochlorine compounds, due to their persistence and established role in causing adverse environmental effects are also of concern. Human health effects of organochlorine compounds are controversial. The particular organochlorine of concern are dioxins, furans, and PCBs. In 1988 and 1990, Canadian studies reported large concentrations of furans in fish collected in the Columbia River downstream of a pulp mill near Castlegar, British Columbia. The Washington state Department of Ecology (Ecology) confirmed that fish from Lake Roosevelt contained elevated furan concentrations, but that concentrations of dioxins and furans generally decreased as one moves downstream away from Canada.

In a 1992 study, the USGS reported that dioxins and furans were present in suspended sediment collected from the Columbia River, but only a few of the 17 targeted isomers were detected. The form of dioxins most toxic to some laboratory animals was not detected. Aside from dioxins and furans, few of the many other organic compounds associated with wood-pulp waste, urban runoff, and industrial activities were detected in the bed sediments of Lake Roosevelt and its major tributaries.

There is generally less known about PCBs than about the dioxin and furan compounds. In 1993-94, Ecology reported that PCBs were detected in most fish samples from the Spokane River, and that concentration were highest in fish collected from the Spokane River above Spokane, but below the Idaho border. New data developed by EPA and other agencies indicates that heavy metals may also present risks to Lake Roosevelt and that further study of the risk of adverse impact to human health is needed. In general, there needs to be more study regarding how contamination sources located on the Spokane Indian Reservation may have impacted the Colville Reservation. In 1994, the EPA funded a study to determine the potential human health risks posed by concentrations of dioxins, furans, and PCBs in species of fish collected and consumed by people throughout Lake Roosevelt. That study did find that dioxins and furans were present in fish, but that concentrations did not differ from the upper Columbia River to the Grand Coulee Dam. There has been no human health statements released from the EPA PCB study.

In a current follow-up study, the USGS is presently determining if organochlorine compounds, including both dioxins and furans, and PCBs, have decreased in sportfish filets since the EPA study four years ago. This study was requested by the Lake Roosevelt Water Quality Council and Colville Confederated Tribes; the Spokane Tribe

collected the fish as part of a joint (Colville Tribes, Spokane Tribe, Washington Department of Fish and Wildlife) fisheries monitoring program in Lake Roosevelt.

The EPA performed a site inspection of the LeRoi Smelter site in 1993. The SI sampled only on-site surface soils, surface soils of an adjacent city park, and off-site (background) surface soils (a total of only 4 sampling sites) to gather data to evaluate potential soil problems associated with previous smelting operations on site. The sampling revealed that arsenic, antimony, lead and copper were detected on site at significant concentrations (exceeding Washington State Model Toxics Control Act Method B soil cleanup levels). Arsenic and copper were also detected at a significant level off site in the adjacent city park. No sampling of groundwater was conducted, nor was the site assessed with regard to the suspected release or threatened release of a hazardous substance, pollutant, or contaminant on site or from the site into the Columbia River or to groundwater. The report recommended further investigation of the site to evaluate any possible exposure via the air or soil pathway, but no additional investigation has occurred to date.

The Washington State Department of Ecology ranked LeRoi Smelter as a No. 1 (most serious) on the State Hazardous Substances List. Ecology conducted phase I of an assessment for remediation and had intended to undertake phase II work involving well-drilling and a sediment study in 1999. However, phase II of the remediation plan never occurred because Ecology did not have sufficient funds in its 1999 budget. Furthermore, Ecology never considered the cumulative impact of the site in relation to the contribution by other sources to contamination of the Columbia River basin and Lake Roosevelt.

### **The Upper Columbia River Basin is an Important Tribal Resource**

As repeatedly confirmed by decisions of the federal courts, the upper Columbia River basin has been of great importance to the Tribes since time immemorial. Predecessors of the Tribes and its members have always occupied and utilized this area, from below the Columbia-Okanogan confluence up into what is now Canada. The fish, wildlife, and plant materials of the upper Columbia basin have always been of central importance to the Tribes' subsistence and culture.

When the Colville Reservation was established in 1872, the entire segment of the Columbia from the Okanogan confluence to the Canadian border, roughly 150 river miles, was included within the Reservation. In 1891, the Tribes ceded the North Half of the Reservation to the United States, including a portion of the Columbia, but expressly reserved hunting and fishing rights in these ceded lands, including the Columbia River.

The U.S. Supreme Court affirmed these rights in a 1975 decision, *Antoine v. Washington*, 420 U.S. 194, and Section I of the October 1996 Environmental Agreement between the Tribes and EPA also recognizes these rights.

Grand Coulee and Chief Joseph Dams have eliminated anadromous fish from most of the Columbia within the Colville Reservation and former North Half, but the Tribes continue to rely heavily on the anadromous fisheries between Chief Joseph Dam and the Reservation boundary five miles downstream. In addition, the Tribes has come to rely increasingly on the resident fishery and water resources above the dams, both for subsistence and recreation and for economic development in the form of tourist and recreation enterprises.

Active Tribal environmental and fishery management programs, in coordination with other management entities on the system, struggle to maintain a viable, healthy ecosystem given the past environmental damages and current management constraints. It is also important to note that there is increasing recreational use of the Lake Roosevelt system along with increased population growth. The Tribes have established a marina, houseboat rental enterprise and related business in a continuing effort to create jobs and improve the quality of life for Tribal members and the broader community. Therefore, issues about contaminants in the system that raise serious human health questions are critically important to the Tribes and all members of the local population.

### **The Tribes Have Been the Driving Force Behind the Investigation of the Contamination of the Upper Columbia River Basin**

#### **Petition for Preliminary Assessment**

On August 2, 1999 the Tribes, through the Environmental Trust, petitioned Region X of the EPA for a Preliminary Assessment of the Upper Columbia River Basin from the Canadian Border, southward through Lake Roosevelt, to the Grand Coulee Dam, encompassing the water, river- and lake-beds, and banks. A copy of the Petition is provided with these materials.

In the Petition, the Tribes asserted that the following hazardous substances have impacted the study area and should be included in the Assessment process:

1. Metals (arsenic, cadmium, copper, lead, mercury, and zinc); primary source of the contamination appears to be a lead-zinc smelter on the Columbia River in British Columbia but may also come from the Spokane River

2. Blast furnace slag from Canadian smelters as well as from the LeRoi (Northport) Smelter site in Northport, Washington
3. Organochlorine compounds (dioxins, furans, and PCBs) believed to have originated from a pulp mill near Castlegar, British Columbia
4. Wood-pulp waste, urban runoff, and discharges from industrial activities
5. Contaminants released into the Upper Columbia from historic and ongoing mining operations in the region
6. Contaminated fugitive dust caused by exposed sediments resulting from drawdowns of Lake Roosevelt

In a September 22, 1999 meeting Region X of the EPA announced that it had accepted the Tribe's Petition and would commence multiple Preliminary Assessments (PAs) in response to the Petition. The Site Assessment Manager for the PAs is Region X's Monica Tonel. The authorized contractor for the project is Ecology and Environment, Inc. The Regional Counsel assigned to the project is Elizabeth McKenna. A copy of the letter accepting the Petition is provided with these materials for your files.

The sites to be assessed were subsequently added to the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS). They include the following:

Site Name	Location Description	County Code/County	EPA Site Identification #
Bonanza Mine	T37N R38E S2 & 11 Evans, WA 99126	065/Stevens	WASFN1002164
Deep Creek Mine	T39N R40E S26 NE¼ N½ Northport, WA 99157	065/Stevens	WASFN1002164
Grandview Mine	T39N R43E S14, 15, 22, 30 Metaline Falls, WA 99152	051/Pend Oreille	WASFN1002165
Gregor Mine	1 mi N of City of Bossburg, WA 99126	065/Stevens	WASFN1002166
Knob Hill Mine	T37N R32E S27 SE¼ W½ Republic, WA 99166	019/Ferry	WASFN1002163

Site Name	Location Description	County Code/County	EPA Site Identification #
Last Chance Mine	T39N R40E S24 SE¼ SW¼ Northport, WA 99157	065/Stevens	WASFN1002162
Pend Oreille Mine	T39N R43E S10-11, 14-15 Metaline Falls, WA 99152	051/Pend Oreille	WASFN1002160
US Gypsum	City of Evans, WA near Lake Roosevelt	065/Stevens	WASFN1002159
Columbia River RM 745-730	Between River Miles 745 and 730 Northport, WA 99157	065/Stevens	WASFN1002167
Columbia River RM 730-710	Between River Miles 730 and 719 Evans, WA 99126	065/Stevens	WASFN1002168
Columbia River RM 710-640	Between River Miles 710 and 640 Gifford, WA 99167	065/Stevens	WASFN1002169
Columbia River RM 640-620	Between River Miles 640 and 620 Lincoln, WA 99147	043/Lincoln	WASFN1002170
Columbia River RM 620-597	Between River Miles 620 and 597 Coulee Dam, WA 99116	025/Grant	WASFN1002171

**EPA/Colville Tribes Memorandum of Agreement Regarding the Preliminary Assessment of the Columbia River, River Mile 597-745**

To facilitate the Tribes' participation and involvement in the PAs, the Tribes and EPA executed a Memorandum of Agreement (MOA) on June 29, 2000. This MOA recognizes EPA's fiduciary obligation to the Tribes and provides a mechanism for coordination and consultation among the Tribes and the EPA during PA activities conducted at the Columbia River, RM 597-745/Lake Roosevelt Site. The MOA provides a framework for good faith government-to-government coordination for CERCLA response activities conducted at the Site, and to ensure that the EPA fulfills its responsibility to consult with the Tribes prior to taking action that may impact their reservation or treaty resources.

### **Additional Sites**

The Tribes have continued to investigate additional sources of contamination to Lake Roosevelt. As a result of its investigations, the Tribes have identified an additional twenty-two (22) sites that it has requested, by letter dated August 2, 2000, that EPA consider for preliminary site assessment work under CERCLA. These sites lie in the Lake Roosevelt/Upper Columbia Watershed (7 sites, including the Spokane River arm of Lake Roosevelt); the Pend Oreille River Watershed (2 sites); the San Poil River Watershed (5 sites); the Kettle River Watershed (3 sites) and the Colville River Watershed (5 sites). It is the Tribes' belief that each of these sites contributes to the release of hazardous substances into the upper Columbia River basin and Lake Roosevelt and warrants a PA under CERCLA.

### **Natural Resource Damage Assessment and Remediation**

In November, 1998 the Tribes first attempted to convene a Natural Resource Trustee Council to address harm to natural resources in the upper Columbia River basin. The Tribes contacted Chuck Rice and Elizabeth McKenna from EPA; Tony Grover, Carl Nuechterlein, David Knight, Guy Gregory, Bill Fees, and Flora Goldstein from the Washington State Department of Ecology; Tanya Barnett and Fritz Clarke from the Washington Office of the Attorney General; Mark Munn and Cindi Barton of the United States Geological Survey; and Mary Verner Moore from the Spokane Tribe of Indians. This abbreviated Trustee group met on two occasions and the Tribes began drafting a Memorandum of Agreement among the Trustees, without success. This draft MOA is being provided with these materials, to serve as a starting point for further negotiations.

The Bureau of Indian Affairs, in coordination with the Tribes and the USFWS, submitted a 2001 DOI NRDAR Funding Proposal for Lake Roosevelt and the Upper Columbia River Basin. Unfortunately, the proposal failed to rank high enough to be funded for FY 2001.

### **Contamination of the Upper Columbia River Basin is Attributable to Canadian Sources.**

Ten miles north of the Canadian border on the Columbia River lies the world's largest integrated lead-zinc smelter and refiner, the Cominco Smelter in Trail, British Columbia. The smelter has operated since the turn of the century, releasing hazardous substances to the air and directly into the Columbia River. The Trail, British Columbia area has been designated a Wide Area Contaminated Site, the Canadian equivalent of a

Superfund Site, by Environment Canada. As of 1994, Cominco discharged an average of 360 metric tons per day of smelter slag directly into the Columbia River. The "black sand" that covers the river bottom and beaches at Northport, Washington is Cominco smelter slag, which contains zinc, copper, and lead.

Thirty miles north of the Canadian River, also on the Columbia River, lies the Celgar Pulp Company, a bleached kraft pulp mill in Castlegar, British Columbia. Celgar has been in operation since 1961. Hazardous substances associated with pulp and paper production may include tetrachlorodibenzo-p-dioxins (TCDDs), tetrachlorodibenzofurans (TCDFs), and other organics. Additionally, when effluent containing wood debris and pulp fibers is discharged into the aquatic environment, a fiber mat may form that contains persistent chemicals from pulp production and bleaching processes that may include polynuclear aromatic hydrocarbons (PAHs), TCDDs, and heavy metals. One of the effects of Celgar's discharges into the Columbia River was the formation of a fiber mat on the riverbed just downstream of Celgar. The Tribes believe that spongy material that coats the river bed and beaches in Northport, forty-five RM downstream of Celgar, was originally part of the Celgar fiber mat.

Municipal wastewater treatment facilities in Castlegar and Train, British Columbia discharge to the Columbia River. In 1991, an overloaded Trail sewage collection system had a large release of raw sewage to the Columbia River.

Sediment contamination has been documented near the Canadian border and at sample intervals all the way downstream to Grand Coulee Dam.

The international aspects of this Site, and the scope of EPA's authority to go after foreign sources, are clearly issues about which the Trustees should be aware, and concerned.

### **Changes in Reservoir Levels Contribute to Hazardous Fugitive Dust Emissions**

There are presently more than 30 federal dams on the Columbia River, including Grand Coulee Dam, completed in 1941, behind which Lake Roosevelt sits. The operations of the federal dams are coordinated pursuant to the terms and conditions of a tri-party agreement among the United States Army Corps of Engineers (Corps), the Bonneville Power Administration (BPA), and the United States Bureau of Reclamation (USBR) called the System Operational Plan (SOP). The USBR operates Grand Coulee Dam.

During drawdowns, potentially contaminated sediments are exposed to the air. When the sediments become dried out, they often become airborne in frequent dust storms. The potential threat to human health and the environment that is presented by these dust storms has been recognized by EPA's contractor, Ecology and the Environment, in its Preliminary Assessment Report.